JOINT COMMITTEE OF THE EUROPEAN SUPERVISORY AUTHORITIES

30 October 2014

Mapping of CRIF S.p.A.'s credit assessments under the Standardised Approach

1. Executive summary

1. This report describes the mapping exercise carried out by the Joint Committee to determine the 'mapping'[1] of the credit assessments of CRIF S.p.A. (CRIF).

2. The methodology applied to produce the mapping is a combination of the provisions laid down in Article 136(2) Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR) and those proposed in the Consultation paper on draft Implementing Technical Standards on the mapping of ECAIs' credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013 published on 5 February 2014 (draft ITS).

3. The mapping neither constitutes the one which ESMA shall report on in accordance with Article 21(4b) of Regulation (EC) No 1060/2009 (Credit Rating Agencies Regulation - CRA) with the objective of allowing investors to easily compare all credit ratings that exist with regard to a specific rated entity nor should be understood as a comparison of the rating methodologies of CRIF with those of other ECAIs. This mapping should however be interpreted as the correspondence of the rating categories of CRIF with a regulatory scale which has been defined for prudential purposes. This implies that an appropriate degree of prudence may have been applied wherever not sufficient evidence has been found with regard to the degree of risk underlying the credit assessments.

4. The resulting mapping tables have been specified in Annex III of the addendum to the draft ITS published today. Figure 1 below shows the result for the only ratings scale of CRIF, the Global long-term ratings scale, together with a summary of the main reasons behind the mapping proposal for each rating category.

[1] According to Article 136(1), the 'mapping' is the correspondence between the credit assessments of and ECAI and the credit quality steps set out in Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR).

Figure 1: Mapping of CRIF's Global long-term credit ratings scale

Credit assessment	Credit quality step	Main reason for the mapping
AAA	**2**	The quantitative factors are representative of the final CQS.
AA	**2**	
A	**2**	The quantitative factors are representative of the final CQS.
BBB	**3**	The quantitative factors are representative of the final CQS.
BB	**4**	The quantitative factors are representative CQS 5. The scoring information suggests that it can be mapped to the final CQS.
B	**5**	The quantitative factors are representative CQS 6. The scoring information suggests that it can be mapped to the final CQS.
CCC	**6**	The quantitative factors are representative of the final CQS.
D1	**6**	The meaning and relative position of the rating category is representative of the final CQS.
D2	**6**	The meaning and relative position of the rating category is representative of the final CQS.

2. Introduction

5. This report describes the mapping exercise carried out by the Joint Committee (JC) to determine the 'mapping' of the credit assessments of CRIF S.p.A. (CRIF).

6. CRIF Ratings is a credit rating agency that has been registered with ESMA in 22 December 2011 and therefore meets the conditions to be an eligible credit assessment institution (ECAI)[2]. CRIF is an independent company which issues ratings towards corporations not belonging to financial and public sectors.

7. The methodology applied to produce the mapping is a combination of the provisions laid down in Article 136(2) CRR and those proposed in the Consultation paper on draft Implementing Technical Standards on the mapping of ECAIs' credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013 published on 5 February 2014 (draft ITS). Three sources of information have been used. Firstly, the quantitative and qualitative information available in CEREP has been used to obtain an overview of the main characteristics of this ECAI and an initial estimate of the default rates of its credit assessments. Secondly, since the available data in CEREP for CRIF is scarce, an additional dataset regarding a (financial) credit scoring has been used. Finally, specific information has also been directly requested to the ECAI for the purpose of the mapping, especially the list of relevant credit assessments and detailed information regarding the default definition.

8. The mapping neither constitutes the one which ESMA shall report on in accordance with Article 21(4b) of Regulation (EC) No 1060/2009 (Credit Rating Agencies Regulation - CRA) with the objective of allowing investors to easily compare all credit ratings that exist with regard to a specific rated entity nor should be understood as a comparison of the rating methodologies of CRIF with those of other ECAIs. This mapping should however be interpreted as the correspondence of the rating categories of CRIF with a regulatory scale which has been defined for prudential purposes. This implies that an appropriate degree of prudence may have been applied wherever not sufficient evidence has been found with regard to the degree of risk underlying the credit assessments.

9. Section 3 describes the relevant ratings scales of CRIF for the purpose of the mapping. Section 4 contains the methodology applied to derive the mapping of CRIF's ratings scale. The mapping tables are shown in Appendix 6 of this document and have been specified in Annex III of the addendum to the draft ITS published today.

[2] It is important to note that the mapping does not contain any assessment of the registration process of CRIF carried out by ESMA.

3. CRIF credit ratings and rating scales

10. CRIF produces one type of credit ratings, the **Long-term issue rating**, which may be used by institutions for the calculation of risk weights under the Standardised Approach (SA)[3], as shown in column 2 of Figure 2 in Appendix 1.

11. CRIF assigns these credit ratings to the **Global long-term rating scale** as illustrated in column 3 of Figure 2 in Appendix 1. Therefore, a specific mapping has been prepared for this rating scale. The specification of the Global long-term rating scale is described in Figure 3 of Appendix 1. It should be noted that this rating scale has been introduced in June 2012 and has substituted the previous one. Figure 4 and Figure 5 of Appendix 1 describe the meaning of the old rating scale and its relationship with the new one respectively.

12. CRIF also assigns credit scorings as part of the financial risk assessment that is embedded in the final credit rating. This credit scoring has the same scale as the credit rating. The observed relationship between the credit rating and the credit scoring assigned by CRIF is reflected in Figure 6 of Appendix 2. Since it is only available for a relatively short period (end-2011 to mid-2013), the theoretical relationship provided by CRIF has also been considered (see Figure 7).

13. The mapping of the Global long-term rating scale is explained in Section 4 and it has been derived in accordance with the quantitative factors, qualitative factors and benchmarks specified in the draft ITS.

4. Mapping of CRIF's Global long-term rating scale

14. The mapping of the Global long-term rating scale has consisted of two differentiated stages where the quantitative and qualitative factors as well as the benchmarks specified in Article 136(2) CRR have been taken into account. Figure 16 in Appendix 6 illustrates the outcome of each stage.

15. In the first stage, the quantitative factors referred to in Article 1 draft ITS have been taken into account to differentiate between the levels of risk of each rating category. The *long run default rate* of a rating category has been calculated in accordance with Article 7 draft ITS, as the number of credit ratings cannot be considered to be sufficient.

16. In a second stage, the qualitative factors proposed in Article 8 draft ITS have been considered to challenge the result of the previous stage, especially the additional information that can be obtained from the default experience of credit scorings assigned by CRIF.

[3] As explained in recital 2 draft ITS, Article 4(1) CRA allows the use of the credit assessments for the determination of the risk-weighted exposure amounts as specified in Article 113(1) CRR as long as they meet the definition of credit rating in Article 3(1)(a) CRA.

4.1. Initial mapping based on the quantitative factors

4.1.1. Calculation of the long-run default rates

17. The information contained in CEREP on ratings and default data, shown in Figure 9 and Figure 10 in Appendix 4, cannot be considered sufficient for the calculation of the short and long run default rates specified in the Articles 2 – 4 of the draft ITS since it is only available since 2010 (i.e. it only allows the calculation of 3-year default rates for the second semester of 2010). As a result, the allocation of the CQS has been made in accordance with Article 7 of draft ITS, as shown in Figure 11 of Appendix 4[4].

18. Figure 6 shows the relationship between the between scorings and ratings. The fact that this relationship is only available for a short period (end 2011 to mid-2013) and not a full economic cycle may bias the estimates of the long run default rates of the rating categories if Articles 5 and 6 draft ITS are applied. Therefore, the default rates arising from the scoring population have only been considered in the qualitative framework, as described in section 4.2.

19. The long run default rate benchmark associated with the equivalent category in the international rating scale is a key qualitative factor that has been used for the mapping proposal.

20. For D rating category, no calculation of default rate has been made since it already reflects a 'default' situation.

21. Withdrawn ratings have been weighted by 50% as proposed in Article 3(5) draft ITS because no default information has been available after withdrawal.

22. The default definition applied by CRIF, described in Appendix 3, has been used for the calculation of default rates.

4.1.2. Mapping proposal based on the long run default rate

23. As illustrated in the second column of Figure 16 in Appendix 6, the assignment of the rating categories to credit quality steps has been initially made in accordance with Article 7 of draft ITS. Therefore, the numbers of defaulted and non-defaulted rated items have been used together with the prior expectation of the equivalent rating category of the international rating scale. The results are specified in Figure 11 of Appendix 4:

[4] The ratings produced in 2010 were assigned to the 'old' labeling of the Global long-term rating scale (see Figure 4 of Appendix 1). Therefore, they have been translated into the 'current' labelling using the relationship established by CRIF between both labeling (see Figure 5 in Appendix 1).

Since the relationship between them is not unique (e.g. 'old' A1 may either correspond to 'new' AAA or AA), as a general rule it has been decided that the old ratings correspond to the best of the new categories available (i.e. 'old' A1 corresponding to 'new' AAA). The results are robust to a more conservative choice (i.e. 'old' A1 corresponding to 'new' AA).

- **AAA/AA, BB and B**: the number of rated items in these categories is not sufficient to justify the credit quality step associated with the AAA/AA, BB and B rating categories in the international rating scale (CQS 1, CQS 4 and CQS 5 respectively). Therefore, the proposed credit quality steps for these rating categories are CQS 2, CQS 5 and CQS 6 respectively.

- **A and BBB:** the number of rated items in these two categories is sufficient to justify the credit quality step associated with the A and BBB rating categories in the international rating scale, CQS 2 and CQS 3 respectively.

- **CCC:** since the CQS associated with the equivalent rating category of the international rating scale is 6, the proposed mapping for this rating category is also CQS 6.

4.2. Final mapping after review of the qualitative factors

24. The qualitative factors specified in Article 8 draft ITS have been used to challenge the mapping proposed by the default rate calculation. Qualitative factors acquire more importance in the rating categories where quantitative evidence is not sufficient to test the default behavior, as it is the case for all rating categories of CRIF's Global long-term rating scale.

4.2.1. Credit scoring information

25. As described in the previous sections, a sufficient number of credit ratings is not available for CRIF's rating categories. However, CRIF also assigns **credit scorings** which represent a different measure of creditworthiness than can be used for mapping purposes.

26. The empirical relationship between credit scorings and credit ratings has been applied to the distribution of credit scorings (Figure 12) to estimate the distribution of hypothetical ratings in the scoring population. The result is shown in Figure 13 and the first columns of Figure 14 and Figure 15 in Appendix 5.

27. Once the (hypothetical) rating distribution has been calculated, the long term default rate associated with each rating category needs to be determined. The observed default rates are not available because defaulted and non-defaulted items cannot be distinguished during the assignment process to hypothetical rating categories. Therefore, the long run default rates of rating categories have been indirectly estimated by means of a set of informal tests:

- The long run default rate benchmarks corresponding to the CQS of the equivalent international rating categories have been initially assumed. In this case, AAA, AA, A, BBB, BB, B and CCC have been associated with 0.10%, 0.10%, 0.25%, 1.00%, 7.50%, 20.00% and 34.00% hypothetical long run default rates respectively.

- An overall benchmark-implied long run default rate has been calculated for the scoring population. This number, 8.1%, has been compared to the actually observed default rate[5] 4.7% (see for example Figure 14). The result reflects that the long run benchmark could constitute a conservative estimate of CRIF's rating categories' long term default rates because the implied default rate is well above the observed value. This result is reinforced by the fact that CRIF's scoring population has been observed during a recessionary period, where default rates should be expected to be higher than their long-term level.

- The same test has been performed at a more granular level:

  - Figure 13 shows the benchmark-implied default rates of the scoring population for each date within the observation period. The levels are in all cases significantly above the observed default rates, especially during the first years where the economic crisis had not affected yet the Italian firms.

  - Figure 14 shows a different breakdown of the scoring population, this time by scoring category. Again, the benchmark-implied default rates are clearly above the observed default rates, except for the AAA scoring category.

28. Although the tests described above do not address the default rate calculation for each individual rating category, they suggest that the mapping of CRIF's rating categories to the CQS of the equivalent rating categories in the international scale could be sufficiently prudent, at least on a portfolio basis[6]. This implies that BB and B can be mapped to CQS 4 and CQS 5 respectively. However, AAA and AA are mapped to CQS 2 (as suggested by the quantitative framework) given the reduced capital charge associated with CQS 1 and the lack of quantitative default evidence for individual rating categories.

4.2.2. Other qualitative factors

29. The **definition of default** applied by CRIF and used for the calculation of the quantitative factors has been analysed:

- The types of default events considered are shown in Appendix 3 and are the ones specified in Article 3(6) draft ITS. D1 is consistent with letter (b) of the benchmark definition, while D2 is consistent with letter (a) of the benchmark definition. Letter (d) does not apply to the pool of firms rated by CRIF.

- The information provided by CRIF reveals that the share of bankruptcy-related events is below 50%.

[5] Default rates have been calculated according to the requirements set out in Article 3 draft ITS.

[6] This assessment takes into account point (a) Article 138 CRR, according to which "*an institution which decides to use the credit assessments produced by an ECAI for a certain class of items shall use those credit assessments consistently for all exposures belonging to that class*". Therefore, given that CRIF only rates firms which belong to the exposure class 'Corporates' it could be argued that the mapping is sufficiently conservative, at least, on a portfolio basis.

30. Although the bankruptcy related default events are consistent with the reference level of 50%, the defaults registered by CRIF do not include events related to banking debt, which constitutes a main source of financing for the firms rated by this ECAI. However, the high level of the hypothetical default rate described in paragraph 27 suggests that the mapping so far would be prudent enough to allow for the inclusion of additional default events.

31. Regarding **the meaning and relative position of the credit assessments**, it suggests a more favourable mapping of AAA, AA, BB and B rating categories. However, the absence of empirical evidence does not allow a significant use of this factor to modify any of the proposed mappings. In the case of the D1 and D2 rating categories, their meaning is consistent with the one of CQS 6 stated in Annex II draft ITS.

32. Regarding the **time horizon** reflected by the rating category, CRIF's rating methodology focuses on the long-term. Although this cannot be further supported by transition probabilities due to the low number of ratings, no change is proposed to the mapping.

33. Finally, it should be highlighted the use of the long run default rate benchmark associated with the equivalent category in the international rating scale as the **estimate of the long run default rate** for (1) the calculation of the quantitative factor for all rating categories under Article 7 draft ITS and (2) the assessment of the credit scoring (default) information.

Appendix 1: Credit ratings and rating scales

Figure 2: CRIF's relevant credit ratings and rating scales

SA exposure classes	Name of credit rating	Credit rating scale
Long-term ratings		
Corporates	Long-term issue credit rating	Global long-term credit ratings scale

Source: CRIF

Figure 3: Global long-term rating scale (new scale)

Credit assessment	Meaning of the credit assessment
AAA	Stable company with a very well-balanced financial situation. The risk of default is extremely low.
AA	Company characterized by a very strong ability to repay debt. The risk of default is very low.
A	Company characterized by a strong ability to repay debt, but may be influenced by adverse economic and financial situations. The risk of default is low.
BBB	Company with an overall acceptable ability to repay debt. The risk of default is contained, although linked to market trends.
BB	Company characterized by elements of business and/or financial risk which expose it to more adverse financial or market conditions than the investment grade. Nevertheless, the risk of default is acceptable.
B	Company with a vulnerable financial structure. The risk of default is significantly influenced by adverse economic and financial conditions.
CCC	Company with significant weaknesses in financial terms, very vulnerable and mainly affected by the conditions of the economic and financial context. The risk of default is significant.
D1	Public information showing unpaid financial obligations.
D2	Bankruptcy or similar proceedings.

Source: CRIF

Figure 4: Global long-term rating scale (old scale)

Credit assessment	Meaning of the credit assessment
A1	Stable company with a solid and balanced financial situation. The default risk is minimal.
A2	Stable company with a solid and balanced financial situation. The default risk is minimal.
A3	Company with an excellent situation for the financial balance. The risk of default is very low.
A4	Company with an excellent situation for the financial balance. The risk of default is very low.
A5	Company with a balanced financial structure. The default risk is moderate and it depends on external / market factors not easily predictable.
B1	Company with an overall acceptable financial situation. The risk of default indicates average levels, linked to market trends.
B2	Company with an overall acceptable financial situation. The risk of default indicates average levels, linked to market trends.
B3	Company that shows a financial balance is not completely stable. The default risk is above average but acceptable.
B4	Company that shows a financial balance is not completely stable. The default risk is above average but acceptable.
B5	Company with an unbalanced financial structure and frequent shortages of liquidity. The default risk is above average.
B6	Company with an unbalanced financial structure and frequent shortages of liquidity. The default risk is above average.
C1	Company with significant weaknesses in financial terms. The default risk is significant.
C2	Company with significant weaknesses in financial terms. The default risk is significant.

C3	Company with a financial situation compromised. The default risk is high.
Default	State of declared insolvency (delinquent) or temporary insolvency (non-performing and restructured loans) or where public information certifies a pre-existing state of insolvency.

Source: CRIF

Figure 5: Internal relationship between the old and current labelling of the Global long-term rating scale

Old Scale	Current Scale	
	AAA	AAA
A1		
	AA+	AA
	AA	
A2		
	AA-	
	A+	A
A3	A	
	A-	
A4		
	BBB+	BBB
A5	BBB	
	BBB-	
B1		
	BB+	BB
B2		
	BB	
B3		
	BB-	
B4		
	B+	B
B5		
	B	
B6		
C1	B-	
C2		CCC
	CCC	
C3		

Source: CRIF

Appendix 2: Relationship between credit ratings and credit scorings assigned by CRIF

Figure 6: Observed relationship between credit scorings and credit ratings assigned by CRIF (end-2011 – mid-2013)

Credit scoring CRIF	AAA	AA	A	BBB	BB	B	CCC
Credit rating CRIF							
AAA	3	0	1	0	0	0	0
AA	8	8	1	1	0	0	0
A	0	3	12	5	2	0	0
BBB	0	2	14	26	9	0	0
BB	0	1	4	8	27	4	0
B	0	0	0	1	15	14	0
CCC	0	0	0	0	1	3	2

Source: Joint Committee analysis based on CEREP and CRIF data

Figure 6 shows the credit ratings and credit scorings assigned by CRIF to a set of firms between end-2011 and mid-2013[7]. The behaviour of rating shows that even if the final rating could diverge significantly from the credit scoring on single cases, there is empirical evidence that on average ratings are not more favourable than scorings.

The empirical results find a support in the CRIF rating criteria which require for a company to be classified in the 'A grades' (i.e. AAA to A) it has to show a strong profile on both the business and financial risk profiles (see Figure 7).

[7] The ratings produced before June 2012 were assigned to the 'old' Global long-term rating scale. Therefore, they have been translated into the 'new' rating scale using the relationship established by CRIF between both scales.

Since the relationship between the two scales is not unique (e.g. 'old' A1 may either correspond to 'new' AAA or AA), old ratings have been assigned to the best of the new categories available (i.e. 'old' A1 corresponding to 'new' AAA). The results are robust to a more conservative choice (i.e. 'old' A1 corresponding to 'new' AA).

Figure 7: Expected relationship between credit scorings and credit ratings assigned by CRIF

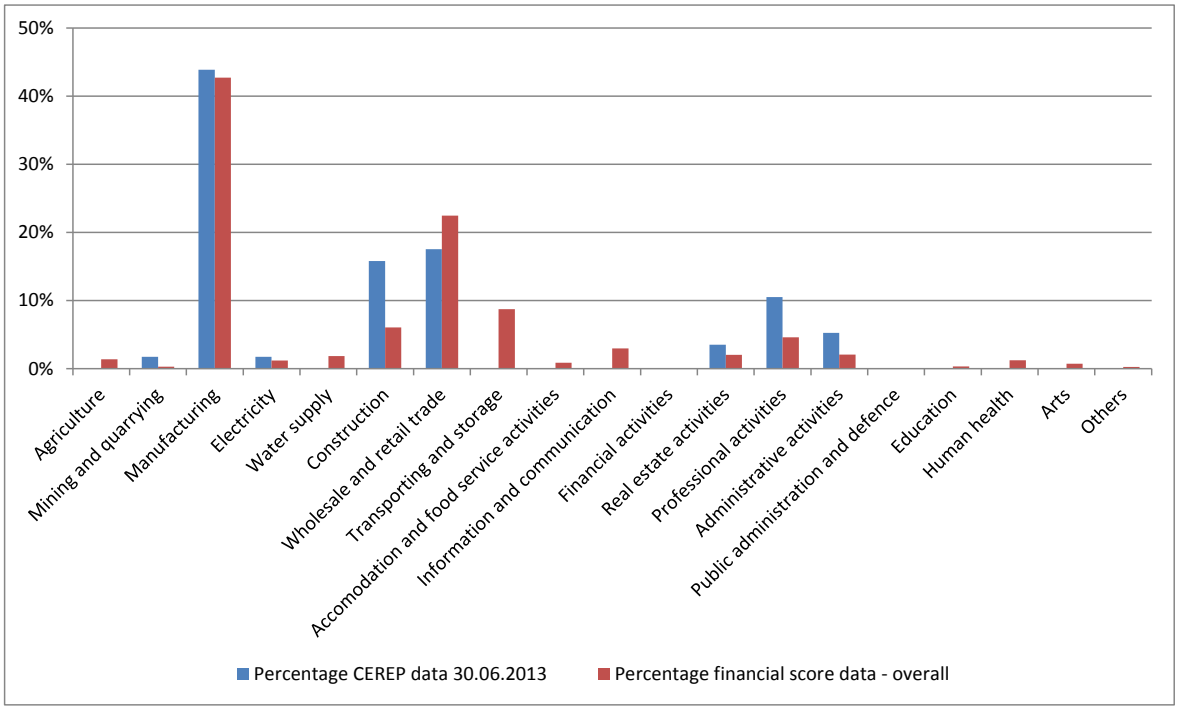
Financial risk	AAA	AA	A	BBB	BB	B	CCC
Business risk							
Excellente	AAA	AA+	AA-	A	BBB-	B+	
Forte	AA+	AA	A	A-	BB+	B	
Saddisfacente	A+	A	BBB+	BBB	BB	B-	
Debole	BBB	BBB-	BB+	BB	B+	CCC	
Vulnerabile	BB	BB-	B+	B	B-	CCC	
Molto Vulnerabile							

Source: CRIF

The credit ratings assigned by CRIF have a financial risk component (credit scoring) and a business risk component. Figure 7 shows how each combination of these two components typically results in the final credit rating.

For example, a AAA-scored firm regarding its financial risk can only be rated as AAA if its business risk assessment is 'Excellente'. This shows how the final rating is generally constrained by the (financial) credit scoring to a maximum of one or two notches upward deviation. This result is broadly supported by empirical evidence presented in Figure 6.

Figure 8: Industry sector distribution of scored and rated items



Source: Joint Committee calculations based on CEREP and CRIF data

Figure 8 shows the distribution across industry sector of credit ratings reported to CEREP in June 2013 and credit scorings assigned by CRIF during the entire available period (end-2006 to end-2013)[6].

In both cases the largest share of rated items belong to the industry sectors “Manufacturing” and “Wholesale and retail trade”. These two industry sectors represent more than 60% of all rated items in both pools. Small differences are observable which mostly can be explained by the small number of rated items in the current CEREP dataset.

Appendix 3: Definition of default

A default event occurs according to CRIF if at least one of the following two issues occurs:

- D1: Public information showing unpaid financial obligations (no matter whether the non-payment applies to specific obligations and CRIF does not believe that this situation extends to the majority of debts or whether the non-payment applies to the majority / to all debts)
- D2: Bankruptcy or similar proceedings

Source: CRIF

Appendix 4: Default rates of each rating category

Figure 9: Number of rated items

Date	AAA	AA	A	BBB	BB	B	CCC	D
01/07/2010	1	2	9	4	11	3	0	n.a.

Source: Joint Committee calculations based on CEREP data

Figure 10: Number of defaulted rated items

Date	AAA	AA	A	BBB	BB	B	CCC	D
01/07/2010	0	0	0	0	1	2	0	n.a.

Source: Joint Committee calculations based on CEREP data

Figure 11: Mapping proposal for rating categories with a non-sufficient number of credit ratings

	AAA/AA	A	BBB	BB	B	CCC
CQS of equivalent international rating category	CQS 1	CQS 2	CQS 3	CQS 4	CQS5	CQS 6
N. observed defaulted items	0	0	0	1	2	0
Minimum N. rated items	496	0	0	19	13	n.a.
Observed N. rated items	3	9	4	11	3	0
Mapping proposal	**CQS 2**	**CQS 2**	**CQS 3**	**CQS 5**	**CQS 6**	**CQS 6**

Source: Joint Committee calculations based on CEREP data

Appendix 5: Calculation of the hypothetical credit rating distribution

Figure 12: Distribution of scoring categories

Date	AAA	AA	A	BBB	BB	B	CCC	D
01/07/2006	969	2,029	4,119	8,192	8,345	4,295	543	n.a.
01/01/2007	923	1,959	3,960	7,839	8,057	4,317	658	n.a.
01/07/2007	969	2,038	4,133	8,174	8,416	4,478	824	n.a.
01/01/2008	926	1,948	4,048	7,984	8,204	4,515	828	n.a.
01/07/2008	1,096	2,189	4,217	7,940	8,622	4,828	794	n.a.
01/01/2009	1,102	2,160	4,141	7,793	8,543	4,956	775	n.a.
01/07/2009	1,384	2,061	3,815	7,470	8,734	5,224	886	n.a.
01/01/2010	1,320	2,053	3,767	7,378	8,627	5,393	1,008	n.a.
01/07/2010	1,042	2,044	3,911	7,563	8,290	5,178	981	n.a.

Source: Joint Committee calculations based on CRIF data

Figure 13: Distribution of hypothetical credit ratings (observation date 01/07/2006)

Credit scoring CRIF	AAA	AA	A	BBB	BB	B	CCC	Total
Hypothetical credit rating CRIF								
AAA	264	0	129	0	0	0	0	**393**
AA	704	1,159	129	200	0	0	0	**2,192**
A	0	435	1,545	999	309	0	0	**3,287**
BBB	0	290	1,802	5,195	1,391	0	0	**8,677**
BB	0	145	515	1,598	4,172	818	0	**7,248**
B	0	0	0	200	2,318	2,863	0	**5,381**
CCC	0	0	0	0	155	614	543	**1,311**
Total	969	2,029	4,119	8,192	8,345	4,295	543	**28,492**

Source: Joint Committee calculations based on CEREP and CRIF data

Figure 13 reflects the estimation of the hypothetical credit rating distribution for the population of scored items available on 01/07/2006 (see Figure 12). In order to derive the number of scorings that would fall in each rating category, the relationship described in Figure 6 between the rating and scoring measures has been used (the similarity of the sector distribution in the rating and scoring populations shown in Figure 8 suggests that such relationship can be applied to the scoring population, although it is acknowledged that other factors may also be relevant).

For example, 27.27% and 72.72% of the 969 AAA-scored items would have been (hypothetically) assigned to the AAA and AA rating categories respectively. These ratios correspond to the share of AAA-scored items that have been rated as AAA and AA by CRIF between end-2011 and mid-2013 (3 were rated as AAA and 8 were rated as AA).

Figure 14: Distribution of hypothetical credit ratings by observation date and hypothesis testing of benchmark long run default rates

Hypothetical credit rating CRIF	AAA	AA	A	BBB	BB	B	CCC	Benchmark-implied default rate	Observed 3-year default rate
Date									
01/07/2006	393	2,192	3,287	8,677	7,248	5,381	1,311	7.59%	2.61%
01/01/2007	375	2,106	3,159	8,326	7,015	5,307	1,424	7.81%	3.36%
01/07/2007	393	2,197	3,295	8,685	7,318	5,522	1,619	7.93%	3.93%
01/01/2008	379	2,107	3,213	8,479	7,165	5,483	1,625	8.02%	4.60%
01/07/2008	431	2,373	3,338	8,629	7,463	5,807	1,643	8.01%	4.88%
01/01/2009	430	2,355	3,282	8,486	7,408	5,867	1,641	8.09%	5.29%
01/07/2009	497	2,486	3,107	8,156	7,444	6,091	1,793	8.38%	5.33%
01/01/2010	478	2,430	3,072	8,057	7,397	6,172	1,938	8.59%	5.99%
01/07/2010	406	2,232	3,134	8,181	7,242	5,939	1,874	8.48%	6.15%
Total	3,782	20,478	28,887	75,677	65,699	51,568	14,869	**8.10%**	**4.70%**

Source: Joint Committee calculations based on CEREP and CRIF data

The rows in the first columns show the result of the process described in Figure 13 for each available period (e.g. row 01/07/2006 reflects the (hypothetical) rating distribution calculated in the last column of Figure 13). The aggregate result is shown in the last row. The column '**Benchmark-implied default rate**' reflects the estimated default rate of the scoring pool under the assumption that the default rate of the rating categories is equal to the long run default rate benchmarks (0.10%, 0.10%, 0.25%, 1.00%, 7.50%, 20.00% and 34.00% respectively). The column '**Observed 3-year default rate**' reflects the actually observed 3-year default rate of the scoring population in each date of the period 01/07/2006 to 01/07/2013.

Figure 15: Distribution of hypothetical credit ratings by scoring category and hypothesis testing of benchmark long run default rates

Hypothetical credit rating CRIF	AAA	AA	A	BBB	BB	B	CCC	Benchmark-implied default rate	Observed 3-year default rate
Credit scoring CRIF									
AAA	2,653	7,075	0	0	0	0	0	0.10%	0.21%
AA	0	10,560	3,960	2,640	1,320	0	0	0.79%	0.17%
A	1,128	1,128	13,541	15,798	4,514	0	0	1.48%	0.50%
BBB	0	1,715	8,577	44,600	13,723	1,715	0	2.62%	1.38%
BB	0	0	2,809	12,639	37,918	21,065	1,404	10.11%	4.97%
B	0	0	0	0	8,225	28,787	6,169	19.62%	12.65%
CCC	0	0	0	0	0	0	7,296	34.00%	25.03%
Total	3,782	20,478	28,887	75,677	65,699	51,568	14,869	**8.10%**	**4.70%**

Source: Joint Committee calculations based on CEREP and CRIF data

The first columns display the distribution of (hypothetical) credit ratings by scoring category. The aggregate result is shown in the last row.

The column '**Benchmark-implied default rate**' reflects the estimated default rate of the scoring pool under the assumption that the default rate of the rating categories is equal to the long run default rate benchmarks (0.10%, 0.10%, 0.25%, 1.00%, 7.50%, 20.00% and 34.00% respectively). The column '**Observed 3-year default rate**' reflects the actually observed 3-year default rate of the scoring population in each scoring category (during the entire period 01/07/2006 – 01/07/2013).

Appendix 6: Mappings of each rating scale

Figure 16: Mapping of CRIF's Global long-term rating scale

Credit assessment	Initial mapping *based on LR DR* (CQS)	Review *based on SR DR* (CQS)	Final review *based on qualitative factors* (CQS)	Main reason for the mapping
AAA	2	n.a.	**2**	The quantitative factors are representative of the final CQS.
AA	2	n.a.	**2**	
A	2	n.a.	**2**	The quantitative factors are representative of the final CQS.
BBB	3	n.a.	**3**	The quantitative factors are representative of the final CQS.
BB	5	n.a.	**4**	The quantitative factors are representative CQS 5. The scoring information suggests that it can be mapped to the final CQS.
B	6	n.a.	**5**	The quantitative factors are representative CQS 6. The scoring information suggests that it can be mapped to the final CQS.
CCC	6	n.a.	**6**	The quantitative factors are representative of the final CQS.
D1	n.a.	n.a.	**6**	The meaning and relative position of the rating category is representative of the final CQS.
D2	n.a.	n.a.	**6**	The meaning and relative position of the rating category is representative of the final CQS.